Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

Claims 1-108. (canceled)

Claim 109 (currently amended): A method of parallel processing multiple reaction mixtures comprising the steps of:

providing reaction chambers with starting materials to form reaction mixtures;

agitating the reaction mixtures during at least a portion of the experiment;

providing interchangeable manifolds having inlet/outlet ports in fluid communication with the respective reaction chambers, wherein a fluid can be introduced into, withdrawn from or vented through the respective reaction chambers; and

evaluating one or more properties of the reaction mixtures or ~~a portion~~ portions of the reaction ~~mixture~~ mixtures by measuring at least one characteristic of the reaction mixtures during at least a portion of the reaction.

Claim 110 (currently amended): The method of claim 109, further including the step of sampling a portion of the reaction mixture from the respective reaction ~~chambers~~ chamber via at least one of the interchangeable manifolds, wherein sampling occurs at a pressure greater than ambient conditions and without reducing the pressure in the respective reaction chambers.

Claim 111 (original): The method of claim 109 further including the step of filtering fluid introduced into or withdrawn from the respective reaction chambers.

Claim 112 (original): The method of claim 109 further including the step of applying a positive pressure to the respective reaction chambers, wherein the maximum pressure is 1500 psi.

Claim 113 (original): The method of claim 109 further including the step of introducing a fluid into the respective reaction chambers under pressure.

Claim 114 (original): The method of claim 113 further including the step of venting outlet ports associated with the respective reaction chambers to a head space defined by the reaction chambers.

Claim 115 (original): The method of claim 113 further including the step of providing an inlet port in fluid communication with the respective reaction chambers so as to establish a common flow path to the respective reaction chambers.

Claim 116 (original): The method of claim 115 further including the step of providing an outlet port in fluid communication with the respective reaction chambers so as to vent the respective reaction chambers to a head space defined by the respective reaction chambers or plugging said outlet port to prevent fluid flow therethrough.

Claim 117 (original): The method of claim 115 further including the step of coupling the respective reaction chambers to a common pressure source so as to establish a common pressure across the respective reaction chambers.

Claim 118 (original): The method of claim 117 further including the step of providing an outlet port in fluid communication with the respective reaction chambers so as to vent the respective reaction chambers to a head space defined by the

respective reaction chambers or plugging said outlet port to prevent fluid flow therethrough.

Claim 119 (original): The method of claim 109, wherein the reaction chambers are provided with starting materials using a robotic materials handling system.

Claim 120 (original): The method of claim 119 further including the step of placing the reaction chambers in a sealed enclosure.

Claim 121 (original): The method of claim 120 further including the step of blanketing the respective reaction chambers in an inert gas atmosphere while providing the respective reaction chambers with the starting materials.

Claim 122 (original): The method of claim 109, wherein the reaction mixtures are evaluated by monitoring a temperature of each of the reaction mixtures.

Claim 123 (original): The method of claim 109, wherein the reaction mixtures are evaluated by monitoring heat transfer rates into or out of the respective reaction chambers.

Claim 124 (original): The method of claim 123, wherein monitoring the heat transfer rates comprises the steps of:

measuring temperature differences between each of the reaction mixtures and a thermal reservoir surrounding the reaction chambers; and

determining heat transfer rates from a calibration relating the temperature differences to heat transfer rates.

Claim 125 (original): The method of claim 123 further comprising computing conversion of the starting materials based on the heat transfer rates of the monitoring step.

Claim 126 (original): The method of claim 125, further comprising determining rates of reaction based on conversion of the starting materials.

Claim 127 (currently amended): The method of claim 109, wherein the agitating step ~~can include the steps of~~ comprises:

bringing a stirring blade assembly into contact with the reaction mixtures, the stirring blade assembly including a spindle supporting a rotatable stirring blade; and

rotating each of the stirring blades so as to cause agitation or mixing of the reaction mixtures.

Claim 128 (original): The method of claim 109, wherein the stirring blades rotate at the same rate, the stirring blades being driven by a motor driven gear drive system.

Claim 129 (original): The method of claim 127, wherein the reaction mixtures are evaluated by monitoring the torque needed to rotate the stirring blade assembly.

Claim 130 (currently amended): The method of claim 129, wherein the torque is monitored by measuring the phase lag between the motor torque and the ~~torque of the~~ stirring blade assembly.

Claim 131 (original): The method of claim 129, wherein the reaction mixtures are evaluated by determining the viscosity of each of the reaction mixtures from a calibration relating torque and viscosity.

Claim 132 (original): The method of claim 131, wherein the reaction mixtures are evaluated by the steps of:

measuring the heat transfer rates into or out of the respective reaction chambers;

computing conversion of the starting materials based on heat transfer rates into or out of the respective reaction chambers; and

calculating molecular weight of a component of the reaction mixtures based on conversion of the starting materials and on viscosity of each of the reaction mixtures.

Claim 133 (original): The method of claim 127, wherein the evaluating step further comprises the step of monitoring the power needed to rotate each of the stirring blade assemblies in the rotating step.

Claim 134 (original): The method of claim 133, wherein the reaction mixtures are evaluated by determining the viscosity of each of the reaction mixtures from a calibration relating power and viscosity.

Claim 135 (original): The method of claim 134, wherein the reaction mixtures are evaluated by the steps of:

measuring the heat transfer rates into or out of the respective reaction chambers;

computing the conversion of the starting materials based on heat transfer into or out of the reaction chambers; and

calculating the molecular weight of a component of the reaction mixtures based on conversion of the starting materials and the viscosity of each of the reaction mixtures.

Claim 136 (original): The method of claim 109, wherein the property evaluated during the evaluation step includes molecular weight, specific gravity, elasticity, dielectric constant, conductivity or calorimetric data.

Claim 137 (currently amended): The method of claim ~~109, wherein~~ 109 further comprising the step of removing a portion of the reaction mixture from the respective reaction chambers ~~includes the step of~~ by establishing a fluid flow path in fluid communication with the respective reaction ~~chambers~~ chamber and ambient conditions, wherein ~~a portion~~ said portion of the reaction mixture can be forced out of the respective reaction ~~chambers~~ chamber and into a sample loop when the fluid flow path is exposed to ambient conditions.

Claim 138 (currently amended): ~~The method of claim 137,~~ A method of parallel processing multiple reaction mixtures comprising the steps of:

providing reaction chambers with starting materials to form reaction mixtures;

agitating the reaction mixtures during at least a portion of the experiment;

providing interchangeable manifolds having inlet/outlet ports in fluid communication with the respective reaction chambers, wherein a fluid can be introduced into, withdrawn from or vented through the respective reaction chambers; and

evaluating one or more properties of the reaction mixtures or portions of the reaction mixtures by measuring at least one characteristic of the reaction mixtures during at least a portion of the reaction; ~~wherein the step of removing a portion of the reaction mixture from the respective reaction chambers further includes the step of:~~

establishing a fluid flow path in fluid communication with the respective reaction chambers and ambient conditions, wherein said portion of the reaction mixture can be forced out of the respective reaction chamber and into a sample loop when the fluid flow path is exposed to ambient conditions, and

providing first flow control ~~valves having~~ valves, each valve having an inlet port supporting a first tubular member, the first tubular member having one end in fluid communication ~~with the~~ with a respective reaction ~~chambers~~ chamber and a second end supported by the first flow control valve such that the second end can be exposed to ambient conditions, whereby the back pressure in the respective reaction ~~chambers~~ chamber pushes a portion of the reaction mixture into the first tubular member when the second end of the tubular member is exposed to ambient conditions.

Claim 139 (original): The method of claim 138, further including the step of:

providing a second tubular member having one end in fluid communication with the first flow control valve and a second end in fluid communication with a selectively openable and closeable inlet port of a second flow control valve, wherein the portion of the reaction mixture drawn into the first tubular member can flow through the second tubular member, through the second flow control valve via an inlet/outlet port of the second flow control valve and into the sample loop, said sample loop having one end supported by the inlet/outlet port and an opposite end supported by a third flow control valve.

Claim 140 (original): The method of claim 139, further including the step of:

providing a fourth tubular member in fluid communication with the second flow control valve and a sample vial, the fourth tubular member having a first end in fluid communication with a selectively openable and closeable outlet port defined by the second flow control valve and a second end in fluid communication with the sample vial, wherein the portion of the reaction mixture drawn into the sample loop can flow back through the second flow control, through the fourth tubular member and into the sample vial when the outlet port of the second flow control valve is opened.

Claim 141 (original): The method of claim 140, further including the steps of:

providing a fifth tubular member having one end in fluid communication with a selectively openable and closeable inlet port defined by the third flow control valve and a second end in fluid communication with a supply of pressurized fluid, wherein the pressurized fluid can be caused to flow through the third flow control valve, the second flow control valve, the sample loop and the fourth tubular member upon opening the inlet port of the third flow control valve, closing the inlet port of the second flow control valve and opening a flow path between the sample loop and the sample vial and opening the second inlet port of the second flow control valve.

Claim 142 (original): The method of claim 109, wherein the step of providing the reaction chamber with starting materials includes the step of providing starting materials in the form of a liquid, solid or a slurry.

Claim 143 (original): The method of claim 109, wherein the step of providing the reaction chambers with starting materials can further include the step of adding a heterogeneous, homogeneous or asymmetric catalyst to the starting materials.

Claim 144 (currently amended): The method of claim 109, wherein the step of providing ~~can include~~ includes the step of providing the reaction chambers with starting materials ~~includes the step of providing starting materials~~ for conducting polymerization or hydrogenation reactions.

Claim 145 (new): A method of parallel processing of reaction mixtures, comprising the steps of:

conducting a first series of parallel reactions in a first parallel reactor system comprising a reactor block including reaction chambers and fluid flow paths, said fluid flow paths being in fluid communication with respective reaction chambers, and a first

manifold assembled with said reactor block to define a plurality of inlet/outlet ports in fluid communication with respective fluid flow paths;

after said conducting step, removing said first manifold from said reactor block;

replacing said first manifold with a second manifold having a configuration different from said first manifold to form a second parallel reactor system; and

conducting a second series of parallel reactions in said second parallel reactor system.

Claim 146 (new): A method as set forth in claim 145 wherein said first manifold is at least one of a general use manifold, a flow-through manifold, and a static pressure manifold, and wherein said second manifold is another of said at least one of a general use manifold, a flow-through manifold, and a static pressure manifold.

Claim 147 (new): A method as set forth in claim 145 wherein said replacing comprises replacing said first manifold with a second manifold having a different configuration of inlet/outlet ports from said first manifold.

Claim 148 (new): A method as set forth in claim 145 wherein the parallel reactor system further comprises a reactor head removably attached to said reactor block, and wherein said first and second manifolds are configured for removable attachment to said reactor block.